

OCCURRENCE OF THE SLIPPER LOBSTER  
*SCYLLARIDES HAANII* IN THE  
HAWAIIAN ARCHIPELAGO

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*Abstract.*—The regular occurrence of *S. haanii* (de Haan, 1841) throughout the Hawaiian Archipelago is documented and represents a major extension of the geographic range of this species, previously known only from the Indo-West Pacific region. Heretofore only one species of *Scyllarides*, *S. squammosus* (H. Milne Edwards, 1837), has been reported from the Hawaiian Islands and adjacent areas.

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Eighty-two specimens of *Scyllarides* from Oahu (21°30'N, 158°W), Nihoa (23°03'N, 161°55'W), Necker (23°34'N, 164°42'W), and Kure Atoll (28°25'N, 178°25'W) in the Hawaiian Archipelago were examined and compared with published descriptions (Holthuis 1947; George and Griffin 1972, 1973). The materials consisted of live animals, including some that were marked and released as part of a capture-recapture study at Kure Atoll, and preserved specimens already deposited in the Bernice P. Bishop Museum (BPBM). Lengths are carapace length (cl), measured between the median point of the anterior part of the carapace (rostrum excluded) and the median point of the posterior margin.

*Scyllarides haanii* (de Haan)

Fig. 1a

*Scyllarus haanii* de Haan, 1841:152.

*Scyllarides haanii*.—Holthuis, 1947:96-99.

*Material.*—OAHU: Honolulu Market, 1 ♂, cl. 108 mm (BPBM, S172).—No data, 1 ♀, 115 mm (BPBM, S3206).—Kaneohe Bay, Jul 1955, C. S. Holmes, 2 ♀, 110 and 111 mm (BPBM, S 6312).—Makapuu Point, fish trap, 135 m, Jun 1979, E. Shallenberger, 1 live ♀, 44 mm; molt (BPBM, S8601).—No data, 1976, 3 ♀, 125-155 mm.—Waikiki, SCUBA, 10 m, Aug 1979, T. Morin, 1 live ♀, 86 mm.—NIHOA: lobster trap, 70 m, Feb 1980, S. Naftel, 1 live ♂, 130 mm.—NECKER ISLAND: lobster trap, 40 m, Nov 1979, S. Naftel, 1 ♀, 168 mm (BPBM, S8602).—KURE ATOLL: lobster trap, 5-10 m, Aug 1979-Jun 1980, C. MacDonald, 15 live ♀, 104-143 mm, 13 live ♂, cl. 121-147 mm.

*Scyllarides squammosus* (H. Milne Edwards)

Fig. 1b

*Scyllarus squammosus* H. Milne Edwards, 1837:284.

*Scyllarides squammosus*.—Edmondson, 1933:233; 1946:258.—Johnson, 1971:77, 97-98.

*Scyllarides squamosus*.—Holthuis, 1947:99-100.

*Material.*—OAHU: no data, 2 ♀, 51 and 73 mm, dry (BPBM, S5860).—Barbers Point, 33.5-35 m, 17 May 1964, R. Ridgeway and E. R. Cross, 1 ♂, 54 mm

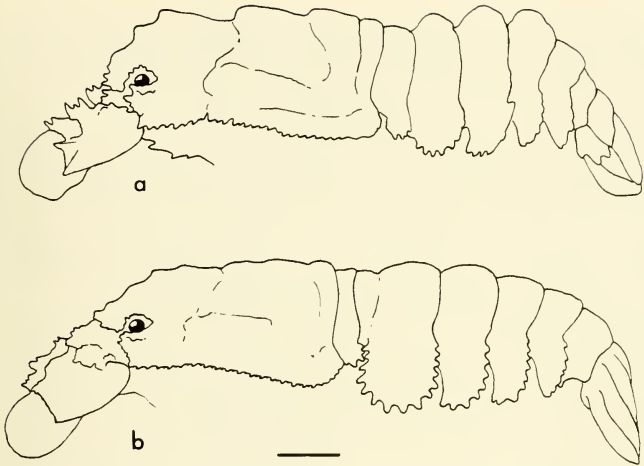


Fig. 1. Lateral view of: a, *Scyllarides haanii*; b, *S. squammosus*. Scale bar: 20 mm.

(BPBM, S6944).—NIHOA: lobster trap, 60 m, Feb 1980, S. Naftel, 7 live ♀, 89–96 mm, 11 live ♂, 86–98 mm.—NECKER: lobster trap, 36 m, Nov 1979, S. Naftel, 5 live ♀, 83–93 mm.—KURE ATOLL: lobster trap, 5–10 m, Aug 1979–Jun 1980, C. MacDonald, 9 live ♀, 75–96 mm, 8 live ♂, 40–95 mm.

Our records of *S. haanii* occurring throughout the Hawaiian Archipelago represent a major eastward extension of a broad geographic range. The previously known distribution of *S. haanii* includes the Red Sea, Mauritius, Singapore, Formosa, Japan, the Malay Archipelago, Western Australia and Lord Howe Island (Holthuis 1947, 1958; George and Griffin 1972, 1973). Heretofore, *S. squammosus* was the only species of *Scyllarides* reported from the Hawaiian Islands and adjacent areas (Edmondson 1933, 1946; Johnson 1971, 1977a, b).

Holthuis (1947) and George and Griffin (1972, 1973) reviewed the morphological characteristics of these species based on specimens from the Netherlands East Indies and Australia respectively, and established the most useful differences for distinguishing *S. haanii* from *S. squammosus*. The most obvious of these are illustrated in Fig. 1. Briefly, they are: 1) the dorsal midline of abdominal segments 2, 3, and 4 is strongly humped in *S. haanii* but is only a weak ridge in *S. squammosus*; 2) the cervical groove and constriction of the carapace behind the eyes is strong in *S. haanii* but weakly defined in *S. squammosus*; and 3) the anterior border of the third antennal segment has a median and terminal spine in *S. haanii* but is spineless in *S. squammosus*. Differences in the coloration pattern of the first abdominal tergite as noted by George and Griffin (1973) are not obvious and do not distinguish the species in our specimens.

In overall appearance the two species are much alike and easily confused. Rathbun (1906) very early suggested that *S. haanii* should be considered a variety

of *S. squammosus*, but later authors (reviewed in Holthuis 1947; George and Griffin 1972, 1973) retained them as distinct. The presence of the morphological differences noted above, which are consistent across the wide geographic range of these species, supports this separation. Further, electrophoretic studies of *S. haanii* and *S. squammosus* from Kure Atoll revealed a suite of diagnostic isozymes that also separated the two species (J. Shaklee, pers. comm.).

Together, *S. haanii* and *S. squammosus* constitute an incidental but potentially valuable part of a recently developed commercial fishery for spiny lobsters in the Northwestern Hawaiian Islands. Also, *S. haanii* commonly is caught by sport divers and commercial trap fishermen in the main Hawaiian Islands. The presence of these two species of *Scyllarides* in Hawaii should be recognized so that the relative contribution of each species to the commercial fishery can be assessed. This is important because potential differences in the population biology of the two species might influence how the fishery should be managed.

During the first year of a study of the population biology of these species at Kure Atoll conducted by one of us (CDM), *S. haanii* constituted 19.4% of 1,016 scyllarids caught by traps and divers. The remainder of the sample was *S. squammosus*. Preliminary results of this study indicate that these species may differ markedly in the nature of their sociality and reproductive seasonality. *Scyllarides haanii* apparently is a solitary species whereas *S. squammosus* tends to occur in groups. Using identical sampling methods and effort, *S. haanii* has been collected as adults but rarely as juveniles whereas *S. squammosus* has been caught as nisto stage postlarvae, juveniles, and adults. Additionally, only a single ovigerous female *S. haanii* has been collected, and that during winter, whereas the reproductive season of *S. squammosus* is well-defined and occurs during summer at Kure Atoll.

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